

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P03/125-do/rg	FOR FURTHER ACTION <div style="float: right; font-size: small;">see Form PCT/ISA/220 as well as, where applicable, Item 5 below.</div>	
International application No. PCT/EP2004/006419	International filing date (day/month/year) 15/06/2004	(Earliest) Priority Date (day/month/year) 11/07/2003
Applicant MERCK PATENT GMBH		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☐ **Unity of invention is lacking** (see Box III).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

BENZIMIDAZOLE DERIVATIVES AS RAF KINASE INHIBITORS

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. _____

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

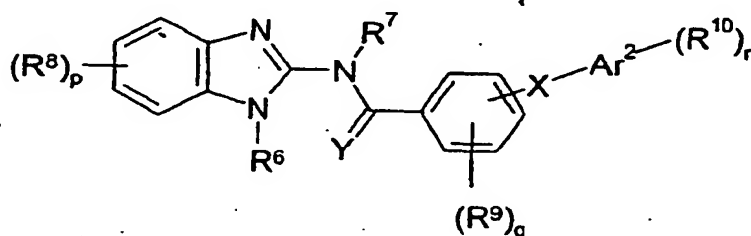
International application No.

PCT/EP2004/006419

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

The present invention relates to benzimidazole derivatives of formula I, the use of the compounds of formula I as inhibitors of one or more kinases, the use of the compounds of formula I for the manufacture of a pharmaceutical composition and a method of treatment, comprising administering said pharmaceutical composition to a patient.

Accordingly, the compound of Formula I or a pharmaceutically acceptable salt thereof is administered for the treatment of diseases mediated by one or more kinase pathways, preferably by the raf kinase pathway, especially cancers,



INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/006419

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K31/4184 C07D401/12 A61K31/4439 A61P35/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BEILSTEIN Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/27819 A (MANLEY PAUL WILLIAM ; NOVARTIS AKTIENGESELLSCHAFT (CH); BRUEGGEN JOSE) 18 May 2000 (2000-05-18)	1,2,6-31
Y	examples 8.2,8.7,8.12 page 70 - page 71; claims 2-5,9	3-5
X	WO 02/44156 A (GLAXO GROUP LTD ; WEST ROB I (GB); GLAXOSMITHKLINE K K (JP); HASEGAWA) 6 June 2002 (2002-06-06)	1,2,6-31
Y	page 3, line 23 - line 26; claims 1,2,45; examples 90,91 scheme 2	3-5
X	WO 03/030902 A (FRENKEL ALEXANDER DAVID ; SMITH ANDREW (GB); LIVELY SARAH ELIZABETH (G) 17 April 2003 (2003-04-17)	1,2,6-31
Y	page 2, line 29 - line 31; claims 1,19,28,34,40,50,67; examples 32,33	3-5
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

31 August 2004

Date of mailing of the international search report

10/09/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Seymour, L

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/006419

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/21160 A (AXXIMA PHARMACEUTICALS AG ; MARSCHALL MANFRED (DE); STAMMINGER THOMAS) 29 March 2001 (2001-03-29)	1,2,6-31
Y	figure 1, p. 5/6; claims 1,11,12 -----	3-5
X	WO 02/46171 A (SIGNAL PHARM INC) 13 June 2002 (2002-06-13)	1,2,6-31
Y	page 19, line 4 - line 31 page 92, line 20 page 60, line 10 - line 20 -----	3-5
X	US 4 002 623 A (KADIN SAUL BERNARD) 11 January 1977 (1977-01-11)	1,2,6-31
Y	column 1, line 9 - line 24; claim 1; examples 7,27 -----	3-5
X	US 4 011 236 A (GRIER NATHANIEL) 8 March 1977 (1977-03-08) the whole document -----	1,2
P,X	WO 2004/001059 A (BORZILLERI ROBERT M ; SQUIBB BRISTOL MYERS CO (US); BHIDE RAJEEV S (US) 31 December 2003 (2003-12-31)	1,2,6-28
P,Y	claims 1,7,13-17; examples 97,98 -----	3-5
P,X	WO 2004/014369 A (AVENTIS PHARMA GMBH) 19 February 2004 (2004-02-19)	1-3,6-31
P,Y	page 37, line 1 - line 10; claims 2,10,11; example 71 -----	4,5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2004/006419

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 12, 13 and 15-28 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/006419

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0027819	A	18-05-2000	DE 19910396 A1	07-09-2000
			AU 771180 B2	18-03-2004
			AU 1045400 A	29-05-2000
			BG 105588 A	30-04-2002
			BR 9915553 A	14-08-2001
			CA 2350208 A1	18-05-2000
			CN 1325384 T	05-12-2001
			CZ 20011631 A3	17-10-2001
			EA 4701 B1	24-06-2004
			EE 200100258 A	16-12-2002
			WO 0027819 A2	18-05-2000
			EP 1129074 A2	05-09-2001
			HR 20010402 A2	31-10-2003
			HU 0104425 A2	28-03-2002
			JP 2002529452 T	10-09-2002
			NO 20012245 A	10-07-2001
			NZ 511413 A	30-01-2004
			PL 348349 A1	20-05-2002
			SK 6072001 A3	07-01-2002
			TR 200101307 T2	21-05-2002
			AU 758230 B2	20-03-2003
			AU 1381100 A	29-05-2000
			BR 9915210 A	24-07-2001
			CA 2346898 A1	18-05-2000
			CN 1331680 T	16-01-2002
			CZ 20011615 A3	15-08-2001
			WO 0027820 A1	18-05-2000
			EP 1129075 A1	05-09-2001
			HU 0104188 A2	28-03-2002
			ID 30181 A	08-11-2001
			JP 2002529453 T	10-09-2002
			NO 20011894 A	04-07-2001
			NZ 511339 A	25-07-2003
			PL 347589 A1	08-04-2002
			SK 6282001 A3	11-09-2001
			TR 200101237 T2	21-08-2001
			US 2003064992 A1	03-04-2003
			US 2002019414 A1	14-02-2002
			ZA 200103290 A	23-01-2003
			ZA 200104673 A	09-09-2002
WO 0244156	A	06-06-2002	AU 3243902 A	11-06-2002
			EP 1341771 A2	10-09-2003
			JP 2004517080 T	10-06-2004
			WO 0244156 A2	06-06-2002
WO 03030902	A	17-04-2003	CA 2458533 A1	17-04-2003
			EP 1434579 A1	07-07-2004
			WO 03030902 A1	17-04-2003
			US 2003144286 A1	31-07-2003
WO 0121160	A	29-03-2001	WO 0121160 A2	29-03-2001
			AU 7906400 A	24-04-2001
WO 0246171	A	13-06-2002	AU 2019502 A	18-06-2002
			CA 2431160 A1	13-06-2002
			EP 1349841 A2	08-10-2003
			US 2003203926 A1	30-10-2003

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/006419

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0246171	A		WO 0246171 A2	13-06-2002
US 4002623	A	11-01-1977	US 4059584 A	22-11-1977
US 4011236	A	08-03-1977	US 3907700 A	23-09-1975
			BE 738534 A	09-03-1970
			CH 555387 A	31-10-1974
			DE 1945452 A1	19-03-1970
			FR 2017676 A5	22-05-1970
			GB 1287955 A	06-09-1972
			GB 1287954 A	06-09-1972
			NL 6913261 A	11-03-1970
WO 2004001059	A	31-12-2003	WO 2004001059 A2	31-12-2003
			US 2004077696 A1	22-04-2004
WO 2004014369	A	19-02-2004	EP 1388341 A1	11-02-2004
			WO 2004014369 A1	19-02-2004
			US 2004110808 A1	10-06-2004